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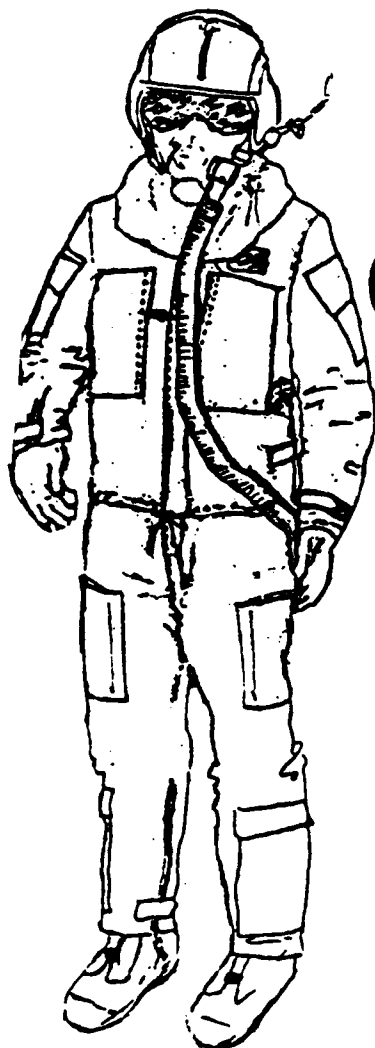
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USE AND CARE OF THE COAT AND TROUSERS,

CHEMICAL PROTECTIVE, AIRCREW,

FLAME RESISTANT

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U.S. ARMY TROOP  
SUPPORT COMMAND



U.S. ARMY NATICK R, D & E CENTER

NATICK, MA 01760-5019

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# FOREWORD

0 The Coat and Trousers, Chemical Protective, Aircrew, Flame Resistant is a chemical protective and flame resistant duty uniform.

0 The system incorporates both the fire retardancy of the CWU-27/P Coveralls (Coveralls, Flyer's, Men's, Summer, Fire-Resistant) and chemical/biological protection of the Battledress Overgarment (BDO) into a single integrated duty uniform.

0 The Coat and Trousers, Chemical Protective, Aircrew, Flame Resistant reduces and minimizes weight and bulk; the system weighs approximately 5 pounds.

0 The system is not launderable. It may be laundered only for training purposes.

0 The system protection may be degraded by gross contamination with fuel, oil or hydraulic fluid.



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## Section I: INTRODUCTION

A. PURPOSE. This pamphlet was prepared to help you understand the use and care of the Coat and Trousers, Chemical Protective, Aircrew, Flame Resistant.

B. SCOPE. The pamphlet includes garment description, general use and care instructions, general repair procedures when used as a training garment, and descriptive/reference data for the Coat and Trousers, Chemical Protective, Aircrew, Flame Resistant.

## Section II: SYSTEM DESCRIPTION

A. GENERAL. The Coat and Trousers, Chemical Protective, Aircrew, Flame Resistant is composed of state-of-the-art materials which provide chemical/biological protection and is resistant to water, flame, petroleum, oils, and lubricants (POL's). The outershell material is composed of a breathable membrane which allows perspiration to escape through the outershell but prohibits liquid to penetrate through to the membrane's inner side.

Appendix A (page 20) lists available sizes with an explanation of sizing terminology.

### B. CLOTHING ITEMS.

1. Coat and Trousers, Chemical Protective, Aircrew, Flame Resistant are issued separately but are intended to be worn together as a uniform.

a. Coat Description. The coat is a hip-length design with stand-up collar and full length sleeves with adjustable tab and hook and loop fastener tapes. Each sleeve has an outside one-side bellows type pocket and an inner atropine pocket with an outside flap that covers both the atropine and bellows pocket. The left sleeve has a pencil pocket located on the front side of the bellows pocket. The coat has two side-opening chest pockets, front closure with slide fastener and intermittent fastener tapes, and an elastic drawcord in the hem with a spring-loaded cord closure. The coat has an inner curtain attached to the liner at the mid-section along with two elastic fastener tabs which attach to buttons on the trousers.

The coat has two cone openings for compatibility with the developmental microclimate cooling vest. The vest hose will pass through one cone opening to plug into a

b. Trouser Description. The trousers have a slide fastener front opening with protective flap, two bellows type pockets with slide fastener openings located at the thigh, two bellows type pockets with flaps located at the calf, waist adjustment buckles and straps, and belt loops. Two buttons are located at the waist front for the curtain fastener tabs. Each leg has a slide fastener located at the inseam hem to secure the gusseted opening. The closure is adjusted with tab and fastener tapes.

2. Materials Used. Each uniform is a two layer system. The outer shell is a 95/5 Nomex / Kevlar blend, polytetrafluoroethylene (PTFE) laminate and the inner layer is a 90 mil carbon impregnated, flame resistant, polyurethane foam nylon tricot laminate.

3. Concept of Use. The uniform is to be worn in all climatic categories where chemical protection is required; hot, basic, cold, and extreme cold. The AUIB will be issued as individual clothing to Army aircrews/aviators. Reference NATICK-P 32.1, Items of Combat Clothing and Equipment (September 1988). It is a form fitting duty uniform and a replacement to wearing both the Battledress Overgarment (BDO) and CWU-27/P flight suit without degrading aircrew performance. The AUIB is designed to be worn over underwear only, long or short depending on the environment.

4. Wear Life. In a chemical threatened combat environment, this suit will offer the following protection:

WEAR DAYS	HOURS OF CHEMICAL PROTECTION
Up to 15	24
15 to 30	6

When contaminated or worn for 30 days (which ever comes first), the coat and trousers are turned in for proper disposal and resupplied.



### Section III: USE AND CARE

YOU are responsible for keeping your Coat and Trousers, Chemical Protective, Aircrew, Flame Resistant in good serviceable condition.

This is YOUR uniform. It will not continue to look its best unless it is kept clean, maintained and stored properly. The uniform will protect you only if YOU take care of it and wear it properly.

Check the label to see if you have the correct size. This is extremely important in order to achieve maximum protection and user satisfaction. Refer to Appendix B, Size Chart, for appropriate sizing.

Coat and Trousers, Chemical Protective, Aircrew, Flame Resistant is Different.

Follow the use and care instructions contained in this chapter and on the label attached to each coat and trouser. Pay particular attention to instructions for these items as they are made of state-of-the-art materials and require added care. Refer to Chapter 2 of FM 21-15, Care and Use of Individual Clothing and Equipment, for additional general care and maintenance instructions.

A. DONNING AND DOFFING PROCEDURES.

1. Donning Sequence. When donning the Coat and Trousers, Chemical Protective, Aircrew, Flame Resistant, unfasten slide fasteners, hook and loop tapes, spring-loaded cord closures and snap fasteners. Don the microclimate cooling vest, if provided, by wrapping it around the torso and adjusting shoulder straps. Insert the microclimate cooling hose, through the cone opening of the coat prior to donning the coat. After donning the coat, connect the hose to cooling vest, if provided, then, engage the slide fastener and close about three-quarters to provide comfort while donning the trousers. Next fasten the lower two hook and loop tapes of the slide fastener protective flap on the coat and roll up the outer lower shell to expose the protective curtain and elastic tape adjustment tabs. Now put the trousers on. You do not have to remove your combat boots to put on the trousers.

As the trousers are donned, be sure to insert the protective curtain inside of the trousers and make sure the protective fly piece is in the correct position. Next close the snap fasteners and fully engage the slide fastener. Pull the trousers up until the buckle and tape waist adjustment straps are above the hip bone and pull to tighten. The trousers are high-waisted. If desired, a belt can be worn with the uniform. Insert the buttons on the trousers to the elastic tape fasteners on the curtain from the coat. Now roll down the outer lower shell to cover the curtain and trouser interface. Next adjust the leg openings, close the slide fasteners, and fasten the hook and loop tapes. Now close the slide fastener on the coat.

Next close the hook and loop tapes over the slide fastener to seal, pull the elastic drawcord in the bottom hem to tighten and adjust the spring-loaded cord closure. Then adjust the waist hook and loop adjustment tabs on each side of the coat.

To seal off the microclimate cooling system hose tightly at the cone opening in the coat: pull the spring-loaded drawcord around the cloth cone, wrapping the hose and tucking the cord closure over and under the drawcord and pulling as tight as necessary for a complete seal. The opening which is not being used, should be closed off in the same manner, wrapping the drawcord around the cloth cone opening (without hose), tucking cord closure over and under its cord. There is no collar adjustment other than the hook and loop tape. The neck can be folded down when not in uniform. After donning CB gloves, adjust the wrist hook and loop tapes.

2. Doffing Sequence. Doffing will be in reverse order of donning the aircrew suit. It may be necessary for personnel to doff contaminated CB protective gear while in the field. The procedure described in the next section is a possible doffing method to be used in the field. The method of doffing will be for an unassisted aviator to doff contaminated NBC protective gear with limited risk of the underclothing becoming contaminated. Successful accomplishment of this task requires a thorough familiarity of the NBC gear and a cautious and deliberate execution of each of the steps in the procedure. The aviator will remove the helmet, mask, hood, and blower when appropriate and in the proper order, being cautious not to contaminate oneself.

To doff the suit, bend over and unhook the hook and loop tapes and pull open the slide fastener on each leg. Caution: Be sure not to touch and contaminate the inside of the uniform and avoid leg movement until you start doffing the pants. Decontaminate the microclimate cooling system hose before doffing your suit. Next release the spring-loaded cord closure around the microclimate cooling system hose drawcord to loosen.

Next loosen the spring-loaded cord closure on the drawcord at the bottom of the coat. Now open the hook and loop tapes and open all slide fasteners.

The stand-up collar will be covered by the hood of your CB mask and should not be contaminated. Caution: Do not touch the collar with your body or chin while opening the slide fastener on the coat and buttons on your trousers. Although covered by your CB hood, it may be contaminated. Care must be taken not to touch the inside of the coat or your body with contaminated gloves.

After opening your coat, release the buttons between the trousers and coat being very cautious not to become contaminated. Next grasping both sides of the slide fastener on the coat, simultaneously and slowly pull up and backwards over the shoulders while pulling your arm out of one sleeve. Let the coat drop away from your body removing the other arm and leaning forward to keep the coat clear of your body. Grasp the coat and pull away from you including removal of the microclimate cooling system hose.

After removal of the coat, hold the microclimate cooling hose away from your body with one hand to prevent becoming contaminated. Using the other hand, loosen the tape waist adjustment tabs and unfasten the front outside waist snap. Carefully open the slide fastener and unfasten the front inside waist snap. Do not reach inside the waist to unfasten. Slightly roll the top of the waist down and to the side for easy removal. With one boot, step on the other trouser leg and flex it to lower your trousers. Use one hand to help pull the trousers down. Next raise and remove the leg out and away from your body and shake the trousers off.

A training videotape entitled, "Proper Fit and Wear of the Aircrew Uniform Integrated Battlefield (AUIB)" is available through TASSO #707291DA. The Coat and Trousers, Chemical Protective, Aircrew, Flame Resistant was referred to as the AUIB during its development.

B. INSPECTION. Examine the Coat and Trousers, Chemical Protective, Aircrew, Flame Resistant regularly for tears, punctures, or damage to material. Punctures of the outer layer will produce leaks and compromise its protective ability. It should be replaced if damaged in any manner. For training purposes only, repairs should be made as soon as possible since punctures of the outer layer will eventually ruin the material if not properly maintained.

C. STORAGE. When storing the Coat and Trousers, Chemical Protective, Aircrew, Flame Resistant:

1. Make sure the coat and trousers are clean.
2. Air-dry the item before storing so it does not mildew.
  - o Do not fold wet clothing.
  - o Do not place wet clothing in a bag or pack.
3. When packing clothing, make sure it does not come in contact with sharp objects that may cause rips or tears.

NOTE: ALL SUITS STORED IN CONTINGENCY STOCKPILES FOR REAL-THREAT SCENARIO, SHOULD ALWAYS REMAIN IN ITS ORIGINAL UNIT BAG UNTIL TIME OF USE.

D. ATTACHING RANK INSIGNIAS. Attach rank insignia on the coat with the name block section which is provided at the upper left chest area. The rank insignia may be sewn on the removeable section. Be careful not to puncture or snag the outer layer of material when attaching rank insignia as punctures will produce leaks.

E. CLEANING. (FOR TRAINING ONLY!)

1. General. The Coat and Trousers, Chemical Protective, Aircrew, Flame Resistant may be laundered when used as a training garment. Dirty clothes wear out quickly because dirt cuts textile fibers and retains moisture from perspiration. Prior to laundering and drying, make sure all the drawcoords are tied together, all slide fasteners are engaged and all snaps and hooks are fastened. Securing these items will result in a better laundered garment.

2. Coat and Trousers, Chemical Protective, Aircrew, Flame Resistant.

a. Machine/Hand Laundering. Use wash and wear permanent press fabric cycle or by hand, using warm water (90 F/32 C - 110 F/43 C) and mild powder detergent. (Do not wash garments in liquid detergent. Liquid detergents leave a chemical residue.) Rinse thoroughly in clean, warm water. NOTE: DO NOT USE BLEACH OR STARCH.

b. Drying. Tumble dry at low temperatures (100 F/38 C) and REMOVE IMMEDIATELY from the dryer. AVOID OVER DRYING. To drip dry, remove from water and place on a rust-proof hanger. DO NOT PRESS.

F. STAIN/SPOT REMOVAL. (FOR TRAINING ONLY!)

1. Following instructions on container, use a pre-wash or spot remover directly on the stain or spot followed by a standard laundry cycle with powdered detergent. NOTE: DO NOT DRY CLEAN!

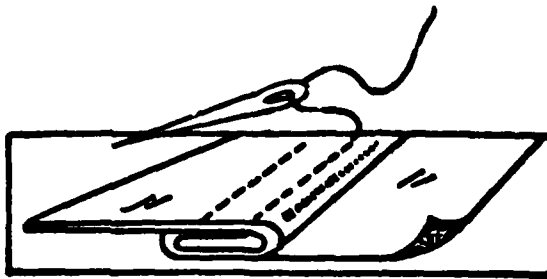
2. Refer to Chapter 2 and Appendix D of FM 21-15, Care and Use of Individual Clothing and Equipment, for additional instructions on stain/spot removal.

Section IV: REPAIR PROCEDURES  
(FOR TRAINING ONLY!)

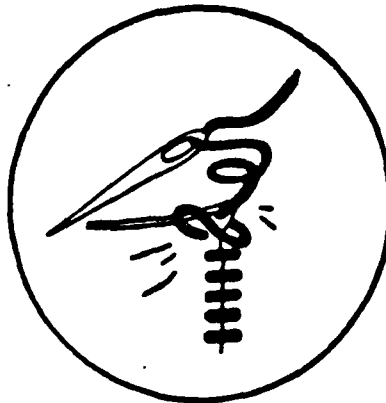
A. RIPS AND TEARS.

1. Coat and Trousers, Chemical Protective,  
Aircrew, Flame Resistant.

a. To mend a ripped seam, overlap the  
two edges and sew with straight and small  
stitches.

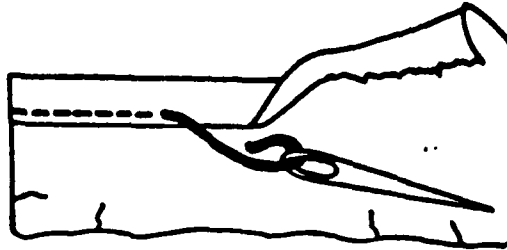


b. To repair a tear, place the two  
edges together and neatly sew.



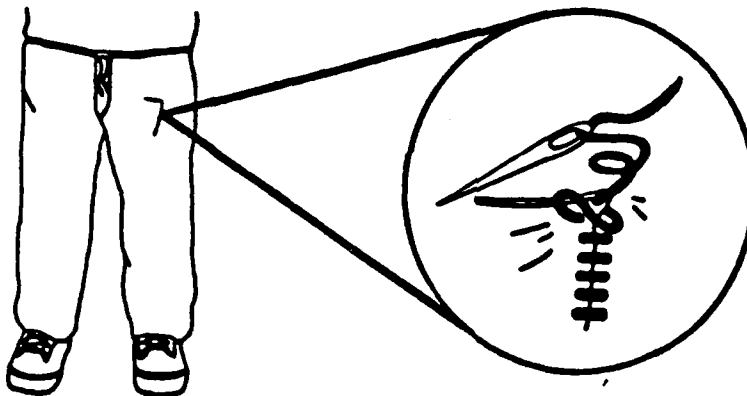


c. To mend a frayed edge, turn the frayed edge under and sew.



## 2. Field Expedient Or Temporary Measures.

a. Loosely whipstitch a rip or tear, keeping the seam as flat as possible. Trim all thread ends.



b. Field taping. Keeping the rip or tear as flat as possible, tape over the puncture. Cut the appropriate size of tape to cover the rip or tear. Round the edges of the tape to reduce fraying. Place the tape over the rip or tear and press firmly.

3. Permanent Repairs. More permanent repair measures involve a seam tape patch and a cross-over sealer. Refer to TM 10-8400-201-23 for additional repair procedures involving the cross-over sealer.

4. Other Than Training Only. All items are considered non-repairable and should be turned in when unserviceable when used in other than a training environment.

#### B. DRAWCORDS.

1. Drawcords are found in the hems of the Coat, Chemical Protective, Aircrew, Flame Resistant. (Elastic with spring-loaded cord closure.)

2. Replace missing or defective elastic drawcords in lengths to match original. If spring-loaded cord closure is broken, tie ends of drawcords into large knots until a new elastic drawcord with spring-loaded cord closure can be obtained from the organizational supply unit.

C. SLIDE FASTENERS. If the slide fastener works stiffly, rub a thin coating of wax or lead-pencil graphite on each side of the track and work slide fastener back and forth a few times. The wax or graphite lubricates the slide fastener and allows it to open and close more easily.

D. MAINTENANCE TURN IN. Turn in clothing to supply points for exchange when:

1. Ripped or torn.
2. Any snap fastener, slide fastener, or hook and loop fastener tape is torn, damaged, or will not hold.
3. Elastic webbing is torn or frayed beyond immediate repair.
4. Clothing is badly soiled that may degrade its performance.
5. Closures or snaps do not function properly.

## APPENDIX A. DESCRIPTIVE DATA

### Schedule of Sizes

	COAT			
	<u>X-Short</u>	<u>Short</u>	<u>Regular</u>	<u>Long</u>
X-Small	X	X	-	-
Small	X	X	X	X
Medium	X	X	X	X
Large	-	X	X	X
X-Large	-	-	X	X

	TROUSER			
X-Small	-	X	-	-
SM	X	X	X	X
MED	X	X	X	X
LG	-	X	X	X
X-LG	-	X	X	X

The Coat and Trousers, Chemical Protective, Aircrew, Flame Resistant are sized similarly to the CWU-27/P flight suit. The coat and trousers are a duty uniform, not an overgarment. The main difference in sizing is the coat has a larger chest grade. In addition, the coat and trousers are sized adjectively (small, medium, large) as opposed to numerically (38, 40, 42). Use the size prediction chart as a guide to determine your approximate coat and trousers size. If your chest size or waist size falls between two sizes you should go to the larger size. Examples: If the subject's height is 5'10" and has a chest measurement of 40 inches, they should wear a medium-regular coat. If the subject's height is 5'10" and has a waist measurement of 34 inches, they should wear a medium-regular trouser.

NOTE: This is a general guide. The coat and trousers will not fit as snugly as the CWU-27/P flight suit. Wear the size that is most comfortable.

## APPENDIX B. SIZE CHART

### Coat prediction chart (inches)

<u>X-Small - X-Short</u> Height: Up to 63 Chest: Up to 33	<u>X-Small - Short</u> Height: From 63 to 67 Chest: Up to 33	<u>Small - X-Short</u> Height: Up to 63 Chest: From 33 to 37
<u>Small - Short</u> Height: From 63 to 67 Chest: From 33 to 37	<u>Small - Regular</u> Height: From 67 to 70 Chest: From 33 to 37	<u>Small - Long</u> Height: From 71 to 74 Chest: From 33 to 37
<u>Medium - X-Short</u> Height: Up to 63 Chest: From 37 to 40	<u>Medium - Short</u> Height: From 63 to 67 Chest: From 37 to 40	<u>Medium - Regular</u> Height: From 67 to 70 Chest: From 37 to 40
<u>Medium - Long</u> Height: From 71 to 74 Chest: From 37 to 40	<u>Large - Short</u> Height: From 63 to 67 Chest: From 41 to 44	<u>Large - Regular</u> Height: From 67 to 70 Chest: From 41 to 44
<u>Large - Long</u> Height: From 71 to 74 Chest: From 41 to 44	<u>X-Large - Regular</u> Height: From 67 to 70 Chest: From 45 to 48	<u>X-Large - Long</u> Height: From 71 to 74 Chest: From 45 to 48

### Trouser prediction chart (inches)

<u>X-Small - Short</u> Waist: From 24 to 27 Inseam: From 27-1/2 to 29-1/2	<u>Small - X-Short</u> Waist: From 28 to 31 Inseam: From 24-1/2 to 26-1/2	<u>Small - Short</u> Waist: From 28 to 31 Inseam: From 27-1/2 to 29-1/2
<u>Small - Regular</u> Waist: From 28 to 31 Inseam: From 30-1/2 to 32-1/2	<u>Small - Long</u> Waist: From 28 to 31 Inseam: From 33-1/2 to 35-1/2	<u>Medium - X-Short</u> Waist: From 32 to 35 Inseam: From 24-1/2 to 26-1/2
<u>Medium - Short</u> Waist: From 32 to 35 Inseam: From 27-1/2 to 29-1/2	<u>Medium - Regular</u> Waist: From 32 to 35 Inseam: From 30-1/2 to 32-1/2	<u>Medium - Long</u> Waist: From 32 to 35 Inseam: From 33-1/2 to 35-1/2
<u>Large - Short</u> Waist: From 36 to 39 Inseam: From 27-1/2 to 29-1/2	<u>Large - Regular</u> Waist: From 36 to 39 Inseam: From 30-1/2 to 32-1/2	<u>Large - Long</u> Waist: From 36 to 39 Inseam: From 33-1/2 to 35-1/2
<u>X-Large - Short</u> Waist: From 40 to 43 Inseam: From 27-1/2 to 29-1/2	<u>X-Large - Regular</u> Waist: From 40 to 43 Inseam: From 30-1/2 to 32-1/2	<u>X-Large - Long</u> Waist: From 40 to 43 Inseam: From 33-1/2 to 35-1/2

#### APPENDIX C. REFERENCES

FM 21-15, Care and Use of Individual Clothing and Equipment

TM 10-8400-201-23, General Repair Procedures for Clothing and Individual Equipment, Organizational and Direct Support Maintenance Manual

NATICK-P 32-1, Items of Combat Clothing and Equipment (September 1988)

Training Videotape Entitled, "Proper Fit and Wear of the Aircrew Uniform Integrated Battlefield (AUIB)." TASSO #707291DA